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1 [What's next in high-performance computing?](#)



Gordon Bell, Jim Gray

February 2002 Communications of the ACM, Volume 45 Issue 2

Publisher: ACM

Full text available: [pdf\(93.07 KB\)](#) [html\(28.62 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 27, Downloads (12 Months): 215, Citation Count: 11

We can trace the evolution from Crays, to clusters, to supercomputing centers. But where does it go from here?

2 [An analysis of a large scale habitat monitoring application](#)



Robert Szewczyk, Alan Mainwaring, Joseph Polastre, John Anderson, David Culler

November 2004 SenSys '04: Proceedings of the 2nd international conference on Embedded networked sensor systems

Publisher: ACM

Full text available: [pdf\(1.22 MB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 21, Downloads (12 Months): 223, Citation Count: 42

Habitat and environmental monitoring is a driving application for wireless sensor networks. We present an analysis of data from a second generation sensor networks deployed during the summer and autumn of 2003. During a 4 month deployment, these networks, ...

Keywords: application analysis, habitat monitoring, implementation, long-lived systems, microclimate monitoring, network architecture, sensor networks

3 [Distributed scientific computing in Java: observations and recommendations](#)

Humphrey Sheil

June 2003 PPPJ '03: Proceedings of the 2nd international conference on Principles and practice of programming in Java

Publisher: Computer Science Press, Inc.

Full text available: [pdf\(81.22 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 4, Downloads (12 Months): 54, Citation Count: 0

The search for techniques to process growing mountains of data efficiently continues apace, nowhere more so than in the field of bioinformatics. Distributed processing represents a practical solution to the search for more powerful architectures that ...

Keywords: Java, Javaspace, artificial neural networks, bioinformatics, distributed computing, jini, parallel programming

4 [Integrating Web Service and Grid Enabling Technologies to Provide Desktop Access to High-Performance Cluster-Based Components for Large-Scale Data Services](#)

Victor P. Holmes, Wilbur R. Johnson, David J. Miller

March 2003 ANSS '03: Proceedings of the 36th annual symposium on Simulation

Publisher: IEEE Computer Society

Full text available:  pdf(157.88 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 38, Downloads (12 Months): 102, Citation Count: 2

At Sandia National Laboratories, a Data Servicessystem is under development to provide web-based accessto high-performance computing clusters. These clustershost a set of scalable post-processing applications for verylarge data manipulation and visualization ...

5 [Compact thermal modeling for temperature-aware design](#)



Wei Huang, Mircea R. Stan, Kevin Skadron, Karthik Sankaranarayanan, Shougata Ghosh, Sivakumar Velusam

June 2004 DAC '04: Proceedings of the 41st annual conference on Design automation

Publisher: ACM

Full text available:  pdf(341.85 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 10, Downloads (12 Months): 128, Citation Count: 27

Thermal design in sub-100nm technologies is one of the major challenges to the CAD community. In this paper, we first introduce the idea of *temperature-aware* design. We then propose a compact thermal model which can be integrated with modern CAD ...

Keyw ords: leakage, power-aware design, reliability, temperature-aware computing, temperature-aware design, thermal model

6 [Energy-performance trade-offs for spatial access methods on memory-resident data](#)

Ning An, Sudhanva Gurumurthi, Anand Sivasubramaniam, Narayanan Vijaykrishnan, Mahmut Kandemir, Mary Jane Irwin

November 2002 The VLDB Journal — The International Journal on Very Large Data Bases, Volume 11 Issue 3

Publisher: Springer-Verlag New York, Inc.

Full text available:  pdf(641.55 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 2, Downloads (12 Months): 49, Citation Count: 2

The proliferation of mobile and pervasive computing devices has brought energy constraints into the limelight. Energy-conscious design is important at all levels of system architecture, and the software has a key role to play in conserving battery energy ...

Keyw ords: Energy optimization, Multidimensional indexing, Resource-constrained computing, Spatial data

7 [The flooding time synchronization protocol](#)



Miklós Maróti, Branislav Kusy, Gyula Simon, Ákos Lédeczi

November 2004 SenSys '04: Proceedings of the 2nd international conference on Embedded networked sensor systems

Publisher: ACM

Full text available:  pdf(178.40 KB)

Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 34, Downloads (12 Months): 246, Citation Count: 34

Wireless sensor network applications, similarly to other distributed systems, often require a scalable time synchronization service enabling data consistency and coordination. This paper describes the Flooding Time Synchronization Protocol (FTSP), especially ...

Keyw ords: clock drift, clock synchronization, multi-hop, sensor networks, time synchronization

8 Window-Based Susceptance Models for Large-Scale RLC Circuit Analyses

Z. Zheng, L. Pileggi, M. Beattie, B. Krauter

March 2002 DATE '02: Proceedings of the conference on Design, automation and test in Europe

Publisher: IEEE Computer Society

Full text available:  pdf(154.58 KB)Additional Information: [full citation](#), [abstract](#), [cited by](#)

Bibliometrics: Downloads (6 Weeks): 2, Downloads (12 Months): 31, Citation Count: 12

Due to the increasing operating frequencies and the manner in which the corresponding integrated circuits and systems must be designed, the extraction, modeling and simulation of the magnetic couplings for final design verification can be a daunting task. ...

9 Producing High-Quality Visualizations of Large-Scale Simulations

Voicu Popescu, Chris Hoffmann, Sami Kilic, Mete Sozen, Scott Meador

October 2003 VIS '03: Proceedings of the 14th IEEE Visualization 2003 (VIS'03)

Publisher: IEEE Computer Society

Full text available:  pdf(432.52 KB)Additional Information: [full citation](#), [abstract](#), [references](#)

Bibliometrics: Downloads (6 Weeks): 21, Downloads (12 Months): 56, Citation Count: 0


This paper describes the work of a team of researchers in computer graphics, geometric computing, and civil engineering to produce a visualization of the September 2001 attack on the Pentagon. The immediate motivation for the project was to understand ...

10 QCDOC: A 10 Teraflops Computer for Tightly-Coupled Calculations

P. A. Boyle, Dong Chen, Norman H. Christ, Mike Clark, Saul Cohen, Zhihua Dong, Alan Gara, Balint Joo, Chulwoo Jung, Ludmila Levkova, Xiaodong Liao, Guofeng Liu, Robert D. Mawhinney, Shigemi Ohta, Konstantin Petrov, Tilo Wettig, Azusa Yamaguchi, Calin Cristian

November 2004 SC '04: Proceedings of the 2004 ACM/IEEE conference on Supercomputing

Publisher: IEEE Computer Society

Full text available:  pdf(2.57 MB)Additional Information: [full citation](#), [abstract](#), [references](#)

Bibliometrics: Downloads (6 Weeks): 2, Downloads (12 Months): 11, Citation Count: 0

Numerical simulations of the strong nuclear force, known as quantum chromodynamics or QCD, have proven to be a demanding, forefront problem in high-performance computing. In this report, we describe a new computer, QCDOC (QCD On a Chip), designed for ...

11 Temperature-aware microarchitecture

Kevin Skadron, Mircea R. Stan, Wei Huang, Sivakumar Velusamy, Karthik Sankaranarayanan, David Tarjan

May 2003 ACM SIGARCH Computer Architecture News, Volume 31 Issue 2

Publisher: ACM

Full text available:  pdf(380.67 KB)Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#)

Bibliometrics: Downloads (6 Weeks): 9, Downloads (12 Months): 98, Citation Count: 84

With power density and hence cooling costs rising exponentially, processor packaging can no longer be designed for the worst case, and there is an urgent need for runtime processor-level techniques that can regulate operating temperature when the package's ...

12 Multigrain shared memory

Donald Yeung, John Kubiawicz, Anant Agarwal

May 2000 ACM Transactions on Computer Systems (TOCS), Volume 18 Issue 2

Publisher: ACM

Full text available:  [pdf\(369.18 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#), [review](#)

Bibliometrics: Downloads (6 Weeks): 5, Downloads (12 Months): 40, Citation Count: 2

Parallel workstations, each comprising tens of processors based on shared memory, promise cost-effective scalable multiprocessing. This article explores the coupling of such small- to medium-scale shared-memory multiprocessors through software over a ...

Keyw ords: distributed memory, symmetric multiprocessors, system of systems

13 [A Performance and Scalability Analysis of the BlueGene/L Architecture](#)

Kei Davis, Adolfo Hoisie, Greg Johnson, Darren J. Kerbyson, Mike Lang, Scott Pakin, Fabrizio Petrini
November 2004 SC '04: Proceedings of the 2004 ACM/IEEE conference on Supercomputing
Publisher: IEEE Computer Society

Full text available:  [pdf\(178.07 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#)

Bibliometrics: Downloads (6 Weeks): 1, Downloads (12 Months): 33, Citation Count: 7

Based on a set of measurements done on the 512-node 500MHz prototype and early results on a 2048 node 700MHz BlueGene/L machine at IBM Watson, we present a performance and scalability analysis of the architecture from low-level characteristics to large-scale ...

14 [Temperature-aware microarchitecture](#)

Kevin Skadron, Mircea R. Stan, Wei Huang, Sivakumar Velusamy, Karthik Sankaranarayanan, David Tarjan

June 2003 I SCA '03: Proceedings of the 30th annual international symposium on Computer architecture

Publisher: ACM

Full text available:  [pdf\(380.67 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#)

Bibliometrics: Downloads (6 Weeks): 9, Downloads (12 Months): 98, Citation Count: 84

With power density and hence cooling costs rising exponentially, processor packaging can no longer be designed for the worst case, and there is an urgent need for runtime processor-level techniques that can regulate operating temperature when the package's ...

15 [Merrimac: Supercomputing with Streams](#)

William J. Dally, Francois Labonte, Abhishek Das, Patrick Hanrahan, Jung-Ho Ahn, Jayanth Gummaraju, Mattan Erez, Nuwan Jayasena, Ian Buck, Timothy J. Knight, Ujval J. Kapasi

November 2003 SC '03: Proceedings of the 2003 ACM/IEEE conference on Supercomputing

Publisher: IEEE Computer Society

Full text available:  [pdf\(901.56 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#)

Bibliometrics: Downloads (6 Weeks): 4, Downloads (12 Months): 71, Citation Count: 21

Merrimac uses stream architecture and advanced interconnection networks to give an order of magnitude more performance per unit cost than cluster-based scientific computers built from the same technology. Organizing the computation into streams and exploiting ...

16 [An empirical performance analysis of commodity memories in commodity servers](#)

Darren J. Kerbyson, Mike Lang, Gene Patino, Hossein Amidi

June 2004 MSP '04: Proceedings of the 2004 workshop on Memory system performance

Publisher: ACM

Full text available:  [pdf\(207.86 KB\)](#)Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 4, Downloads (12 Months): 37, Citation Count: 0

This work details a performance study of six different types of commodity memories in two

commodity server nodes. A number of micro-benchmarks are used that measure low-level performance characteristics, as well as two applications representative of ...

Keywords: memory modules, memory system performance, performance analysis, performance measurement

17 [Proceedings of the 2004 conference on Asia South Pacific design automation: electronic design and solution fair: electronic design and solution fair](#)

Masaharu Imai

January 2004 proceeding

Publisher: IEEE Press

Additional Information: [full citation](#), [abstract](#)

Bibliometrics: Downloads (6 Weeks): n/a, Downloads (12 Months): n/a, Citation Count: 0

It is my pleasure and honor, on behalf of the Organizing Committee, to welcome you to the Asia and South Pacific Design Automation Conference 2004 (ASP-DAC 2004), a sister conference of DAC, DATE, and ICCAD. ASP-DAC 2004 will be held at Pacifico Yokohama, ...

18 [Directed diffusion for wireless sensor networking](#)

Chalermek Intanagonwiwat, Ramesh Govindan, Deborah Estrin, John Heidemann, Fabio Silva

February 2003 IEEE/ ACM Transactions on Networking (TON), Volume 11 Issue 1

Publisher: IEEE Press

Full text available:  [pdf\(589.26 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 62, Downloads (12 Months): 487, Citation Count: 50

Advances in processor, memory, and radio technology will enable small and cheap nodes capable of sensing, communication, and computation. Networks of such nodes can coordinate to perform distributed sensing of environmental phenomena. In this paper, ...

Keywords: data aggregation, data-centric routing, distributed sensing, in-network processing, wireless sensor networks

19 [Wireless sensor networks for habitat monitoring](#)



Alan Mainwaring, David Culler, Joseph Polastre, Robert Szewczyk, John Anderson

September 2002 WSN '02: Proceedings of the 1st ACM international workshop on Wireless sensor networks and applications

Publisher: ACM

Full text available:  [pdf\(542.04 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 121, Downloads (12 Months): 1033, Citation Count: 154

We provide an in-depth study of applying wireless sensor networks to real-world habitat monitoring. A set of system design requirements are developed that cover the hardware design of the nodes, the design of the sensor network, and the capabilities ...

Keywords: environmental monitoring, habitat monitoring, low power systems, sensor network architecture, wireless sensor networks


20 [Sensor network-based countersniper system](#)



Gyula Simon, Miklós Maróti, Ákos Lédeczi, György Balogh, Branislav Kusy, András Nádas, Gábor Pap, János Sallai, Ken Frampton

November 2004 SenSys '04: Proceedings of the 2nd international conference on Embedded networked sensor systems

Publisher: ACM

Full text available:  [pdf\(728.71 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [cited by](#), [index terms](#)

Bibliometrics: Downloads (6 Weeks): 18, Downloads (12 Months): 174, Citation Count: 28

An ad-hoc wireless sensor network-based system is presented that detects and accurately locates shooters even in urban environments. The system consists of a large number of cheap sensors communicating through an ad-hoc wireless network, thus it is capable ...





Keywords: acoustic source localization, data fusion, message routing, middleware services, sensor networks, time synchronization

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